Plant records

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UNION CARBIDE

INTERNAL CORRESPONDENCE

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To ORGDP Nuclear Safety Committee:

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Mr. D. M. Lang	Mr. J. B. Scott

Date November 20, 1961

Originating Dept.

Answering letter date

Subject K-27 Purge Gas Sampler

KR-172

Copy to

Mr. J. P. Murray
ORGDP (Mr. L. W. Anderson - Mr. J. W. Arendt - Mr. R. L. Newton)
Paducah (Mr. R. A. Winkel - Mr. R. C. Baker)
ORNL (Dr. J. A. Swartout)
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Nuclear safety consideration has been given to the operation of a sampling unit to be used for analyzing K-27 process gases, after purging operations, for small amounts of residual UF_6.[1]

Equipment and Operation

The unit consists of two 5' lengths of 5" I.D. pipe, a 3" I.D. x 16" alumina trap, a Welch vacuum pump, and interconnecting small diameter copper tubing and valves, all mounted on a mobile cart. Permanent railings at either end provide a 1' separation between the 5" I.D. pipe and other uranium containers. The sampling unit is attached to the purged system and evacuated. A sample of gas is admitted, diluted with nitrogen, and tested for UF_6. The purging operation and sampling procedure are continued until a "negative" analysis is obtained.

Nuclear Safety

The 5" I.D. pipes are mounted vertically on opposite ends of the mobile cart, with the alumina trap and Welch pump approximately centered between them, such that the center-to-center spacing of the components is 20 inches; this provides

(cont.)

1 Anderson, L. W., Nuclear Safety Approval for Purge Gas Sampler, November 14, 1961.

Union Carbide Nuclear Company, Oak Ridge Gaseous Diffusion Plant, Operating Contractor for the U.S. Atomic Energy Commission.

adequate spacing between these components. Further, the oil volume of the Welch pump is less than the safe volume of 4.8 liters, and the tubing diameter is less than the allowable 1" for "T" connections into a 5" I.D. pipe.

Conclusion

Since all of the components of the sampler are of geometrically safe design and adequate spacing between components is provided, this sampling unit is considered safe for such use at any location in the cascade.

A. J. Mallett
Nuclear Safety Department

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